

Find seat

Complete the Quia Quiz

COMPLETE #8 and #34 FROM BOOK
(p. 643)

Check conditions on both!

Then do #29, assume conditions met

- 8) H_0 : the distribution of weapons used fits the % given
 H_a : the distribution of weapons used does not fit the % given

Conditions:

- 1) Categorical Data 1) weapons used is categorical
- 2) SRS 2) Assume sample is representative
- 3) all exp. counts ≥ 5 3) See table below. all exp ≥ 5

	guns	knives	other	attack	total
observed	966	390	136	260	1752
expected	1110.768	229.512	294.336	117.384	1752

Conditions met $\rightarrow \chi^2$ distribution $\rightarrow \chi^2$ GOF test

$$\chi^2 = \sum \frac{(\text{obs} - \text{exp})^2}{\text{exp}} = \frac{(966 - 1110.8)^2}{1110.8} + \frac{(390 - 229.51)^2}{229.51} + \dots =$$

$$\chi^2 = 389.54$$

$$P(\chi^2 > 389.54 | df = 3) = 4.0812 \times 10^{-84}$$

We reject H_0 b/c p-value of $4.0812 \times 10^{-84} < \alpha = 0.05$.
We have sufficient evidence that the distribution of weapons used against women does not fit the given %.

- 34) H_0 : the distribution of violence is the same for both the full and not full moon
 H_a : the distribution of violence is different for the full and not full moon

Conditions:

- 1) Categorical Data 1) moon type and type of arrest are both categorical variables
- 2) SRS 2) Assume representative
- 3) all exp counts ≥ 5 3) see table below. all exp. NOT ≥ 5

	Full	NF
V	2.5581	2.4419
P	19.442	18.558
D/A	23.535	22.465
Dom	12.791	12.209
O	7.6744	7.3256

Conditions not met \rightarrow If you proceeded anyway (homogeneity test):

$$\chi^2 = \sum \frac{(\text{obs} - \text{exp})^2}{\text{exp}} = \frac{(2 - 2.5581)^2}{2.5581} + \frac{(3 - 2.4419)^2}{2.4419} + \dots =$$

$$\chi^2 = 2.9042$$

$$P(\chi^2 > 2.9042 | df = 4) = 0.574$$

We fail to reject H_0 b/c p-value of $0.574 > \alpha = 0.05$.
We have sufficient evidence that the distribution of violence is the same for both the full and not full moon.

29) Ho: There is no association between gender and political party

Ha: There is an association between gender and political party

Conditions assumed met --> χ^2 distribution --> χ^2 test for Independence

Expected:

	D	R	I
male	43.663	40.545	20.792
female	40.337	37.455	19.208

$$\chi^2 = \sum \frac{(\text{obs} - \text{exp})^2}{\text{exp}} = \frac{(36 - 43.663)^2}{43.663} + \frac{(45 - 40.545)^2}{40.545} + \dots =$$

$$\chi^2 = 4.8512$$

$$P(\chi^2 > 4.8512 | \text{df} = 2) = 0.0884$$

We fail to reject Ho b/c p-value of 0.0884 > alpha = 0.05.
We have insufficient evidence of an association between gender and political party.